

ABSTRACT OF THE DISCLOSURE

The invention provides a method of manufacturing an optical-gate transistor. A BP buffer layer is formed on a silicone substrate first, and a first AlN layer is then formed for offsetting strain in the layers deposited on the first AlN layer. Subsequently, a GaN layer and an n-type AlN layer are successively deposited to form a hetero-junction at the interface. A selective epitaxy or anisotropic etching of a GaN-group material is conducted to form a prism-shaped, light-receiving layer with a cubic lattice. The prism-shaped, light-receiving layer focuses incident light to induce electrons in the n-type AlN layer, which then form a high-speed 2DEG in the GaN layer, thereby increasing the power and sensitivity of the transistor being controlled by illumination.

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